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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/593,633

09/21/2006

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EXAMINER

TAYLOR II, JAMES W

ART UNIT

PAPER NUMBER

4171

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/593,633	<b>Applicant(s)</b> YAMANE ET AL.	
	<b>Examiner</b> James W. Taylor, II	<b>Art Unit</b> 4171	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/21/2006</u> .   | 6) <input type="checkbox"/> Other: ____.                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 states "...said crosslinking agent comprised of diallylphthalate monomer or prepolymer (A) and a crosslinking agent other than diallylphthalate monomer (B) wherein the ratio by weight of the (A) to (B) lies in the range of 5:95 to 25:75." The "order of operations" is not explained. This excerpt could mean either of the following:

#### [Interpretation 1]

"...said crosslinking agent comprised of the product of components (A) and (B), wherein:

component (A) is either:

diallylphthalate monomer or

diallylphthalate prepolymer, and

component (B) is a crosslinking agent other than diallylphthalate monomer, and

the ratio by weight of the (A) to (B) lies in the range of 5:95 to 25:75.”

[Interpretation 2]

“...said crosslinking agent comprised of either:

diallylphthalate monomer

or both:

prepolymer (A) and

a crosslinking agent (B) other than diallylphthalate monomer,

wherein the ratio by weight of the (A) to (B) lies in the range of 5:95 to 25:75.”

The examiner notes that in both interpretations, the claim is satisfied by diallylphthalate prepolymer (A) with crosslinking agent (B) wherein the ratio by weight of (A) to (B) lies in the range of 5:95 to 25:75. Hence, the examiner will attempt to apply art to this scenario.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 3-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamane *et alli* (JP 2001-069765 A, henceforth referred to as "JP2001/069765").

In claim 1, the applicant claims:

- (a) 100 weight parts of a polyester and a crosslinking agent (JP2001/0926, par. 6),
- (b) at least 300 weight parts of an inorganic filler with a particle size greater than 0.5 microns (corresponding to "300 ore more weight sections of aluminium hydroxide," JP2001/0926, par. 11),
- (c) 30 to 160 weight parts of a hollow filler having a pressure resistance of at least  $2,100 \cdot 10^4 \text{ N/m}^2$  (JP2001/0926, par. 6), and
- (d) where the ratio of inorganic filler to hollow filler is 1:4 to 4:1.

Regarding claim 2, the applicant further claims 35 to 75 parts crosslinking agent per 100 parts of unsaturated polyester (JP2001/0926, par. 10) where (interpreted above) diallylphthalate prepolymer (A) (JP2001/0926, par. 10) with crosslinking agent (B) (corresponding to "methyl methacrylate," JP2001/0926, par. 10), the ratio by weight of (A) to (B) lies in the range of 5:95 to 25:75.

Regarding claim 3, the applicant further claims that the polyester resin composition is obtained by polycondensing propylene glycol, bisphenol A, neopentyl glycol, fumaric acid, and maleic anhydride. In JP2001/0926, par. 7-9, the prior art establishes that their unsaturated polyester is not particularly limited, explicitly stating these reagents can be used. As the selection of polyester doesn't appear to be critical and as there is an absence of unexpected results, the claimed condensate is within the scope of what was previously taught. Furthermore, the applicant had motivation to mix several polyalcohols and polycarboxylic acid/derivatives, as mixtures of different residuals polyalcohols and polycarboxylic acid/derivatives during polycondensations breaks up crystallinity, which makes the overall polymer less dense.

Regarding claim 4, the applicant further claims:

(f) the inorganic filler has an average particle size of 15 microns or less (JP2001/0926, par. 11).

Regarding claim 5, the applicant further claims:

(g) the hollow filler has a true specific density of 0.3 to 0.7 (JP2001/0926, par. 14).

Regarding claims 6 and 9, the applicant further claims:

(h) a molding shrinkage ratio of -0.15 to +0.05% (JP2001/0926, tbl. 1),

(i) a coefficient of linear expansion of  $1.0 \times 10^{-5}$  to  $2.5 \times 10^{-5}$  /K ,

- (j) a Barcol hardness of 5 to 25 at 180 °C, and
- (k) a specific gravity of 1.00 to 1.60 (JP2001/0926, tbl. 1).

The examiner takes the position that limitations (i) and (j) are innately met because the compositions between the instant application and JP2001/0926 are similar.

Regarding claim 7, the applicant further claims:

(l) a leveling of 5 to 20 (corresponding to “O” (“Very Good” or “Good” leveling as per par. 29), JP2001/0926, tbl. 1). The examiner takes the position the visual “O” corresponds to a leveling of 5 to 20.

Regarding claims 8-9, the applicant further claims:

(m) an article obtained by molding the composition of claim 1 (JP2001/0926, par. 26).

JP2001/0926's invention is a flame retardant, low specific gravity, unsaturated polyester resin composition. JP2001/0926 uses a ratio of inorganic filler to hollow filler from about 5:1 to 5:10. However, the reasons for using both the inorganic filler and the hollow filler are established in JP2001/0926, and respectively, the reasons are the inorganic filler enhances desirable properties of the composition such as heat and impact resistance and the hollow fillers lower the specific gravity. A prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same

properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (MPEP 2144.05)

Furthermore JP2001/0926 fails to teach a ratio of prepolymer (A) to crosslinking agent (B) in the range of 5:95 to 25:75. Crosslinking agents are known, and their effects studied. Crosslinks are known to help prevent crystalline regions from forming and to harden a plastic. JP2001/0926 establishes the desire for a low density polymer. Therefore, there is motivation to optimize crosslinking agent choice and amount, to help control the density and crystallinity of the polymer, while hardening the polymer for an intended use. As above, this range clearly falls within the scope set forth by JP2001/0926 in par. 10.

Therefore at the time of invention, it would have been obvious to one of ordinary skill in the art to modify JP2001/0926's composition to try adding more hollow fillers or less inorganic fillers to further lower the specific gravity of the composition and to modify JP2001/0926 invention to optimize the relative amounts of crosslinking agents.

Furthermore at the time of the invention, to one of ordinary skill in the art, it would have been obvious to select propylene glycol, bisphenol A, neopentyl glycol, fumaric acid, and maleic anhydride to polycondense the polyester resin of the instant application.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James W. Taylor II whose telephone number is



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(571)270-5457. The examiner can normally be reached on 7:30 am to 5:00 pm (off every other Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art Unit 4171

James W Taylor II  
Examiner  
Art Unit 4171

jwt2